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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,792	02/05/2004	Phillip C. Cagle	200316243-1	5227
22879 7590 06/14/2010 HEWLETT-PACKARD COMPANY Intellectual Property Administration 3404 E. Harmony Road Mail Stop 35 FORT COLLINS, CO 80528				
EXAMINER NILAND, PATRICK DENNIS				
ART UNIT 1796		PAPER NUMBER		
NOTIFICATION DATE 06/14/2010		DELIVERY MODE ELECTRONIC		

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/772,792
Filing Date: February 05, 2004
Appellant(s): CAGLE, PHILLIP C.

Gary Oakeson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/17/10 appealing from the Office action mailed 12/9/09.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

12-16, 18, 23, 25-30, 32, 37, and 39-44.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS.” New grounds of rejection (if any) are provided under the subheading “NEW GROUNDS OF REJECTION.”

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant’s brief.

(8) Evidence Relied Upon

5207824 MOFFATT et al. 05-1993

6536890 KATO et al. 03-2003

US Pat. Application Pub. 2003/0069329 KUBOTA et al. 04-2003

US Pat. Application Pub. 2004/0055508 MIYAMOTO et al. 03-2004

US Pat. Application Pub. 2004/0063807 WANG et al. 04-2004

US Pat. Application Pub. 2004/0229974 MIYABAYASHI 11-2004

Lewis Sr., Richard J.; Hawley's Condensed Chemical Dictionary 13th Ed., John Wiley & Sons, New York, 1997 (pages 459 and 470).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

I. Claims 13-14 and 27-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

A. There is not basis in the originally filed specification for the newly recited limitation of the newly recited endpoint of the instantly claimed non-volatile co-solvent of “from 0.1 wt%” of the instant claims 13-14 and 27-28. The newly recited matter is new matter. The argued page 6, lines 3-6 and 10-13 does not provide support for the newly recited endpoint of 0.1 with regard to the amount of the instantly claimed non-volatile co-solvent. The newly recited endpoint is new matter. See *In re Wertheim*.

The argued “example” and the argued sections of the specification do not apply to non-volatile organic solvent. There is no example using 0.1% of non-volatile organic solvent. In *re Wertheim* is still seen as the most applicable case law but does not sanction the appellant's representative's arguments.

The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

II. Claims 12-13, 15-16, 23, 25-27, 29-30, 37, and 39-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al. (U.S. 2004/0063807) in view of the evidence given in *Hawley's Condensed Chemical Dictionary*.

Wang et al. disclose system for printing images comprising ink jet ink, non-porous substrate such as metal, plastic or glass, thermal printer, and heating element for heating the image once it is printed onto the non-porous substrate. It is disclosed that the ink comprises aqueous liquid vehicle, 10-60% volatile co-solvent having boiling point less than 285 °C, i.e. ethylene glycol methyl ether, propylene glycol methyl ether, triethylene, diethylene, or ethylene glycol (humectant), etc., silicone surfactant or fluorine surfactant, and polymer latex, i.e. acid

functionalized polymer colloid particulates, dispersed in the liquid vehicle wherein the polymer is formed from less than 50 mol% hydrophilic monomer such as (meth)acrylic acid and is obtained from crosslinking monomer, i.e. divinylbenzene or trimethylolpropane triacrylate. Given that the polymer is obtained from hydrophilic monomer such as (meth)acrylic acid, it is clear that the polymer would have acid group on its surface. There is no requirement that the ink comprise non-volatile solvent. It is disclosed that the heating element heats the printed image to temperatures of 50-150 °C which includes temperatures that would inherently drive off the volatile solvent as presently claimed which would inherently improve image permanence as presently claimed. For instance, given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 470), that ethylene glycol methyl ether has boiling point of 124.5 °C, it is clear that when the image is heated at 50-150 °C, the solvent, i.e. ethylene glycol methyl ether, will be driven off as required in present claim 39. There is also disclosed method of printing an image with good rub resistance comprising ink jetting from the printer the ink onto substrate followed by heating the printed image (paragraphs 7, 14-19, 21, 23 (lines 3-4), 33 (lines 1-5 and last 7 lines), 42-45, 47, 51, 53 (line 4), 54, and 103).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does

not have such surface acid groups necessarily and inherently. The instant claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise. The argument that no acid monomer containing latex is exemplified is not persuasive in that the reference is not limited to its examples and is not even required to have examples. Sections [0042]-[0043] encompass the claimed amount of acid monomer. It is not seen that the milling media of section [0024] or the polymeric dispersant of section [0026] does not encapsulate the pigments.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent versus weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no

probative evidence to the contrary, including in the recited case law. The examiner notes MPEP 2112.

Case law argued by the appellants stating what is required of an anticipation rejection is noted and the requirements thereof are met in the rejection above.

The appellant's argument that Wang does not exemplify the instantly claimed pigment cannot be persuasive. The disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer encapsulated pigment colorants as noted above and in the appellant's arguments regarding the disclosure of Wang. Appellant's argument that the disclosed list of pigments are not encapsulated does not remedy the fact that the prior art discloses encapsulated pigments and dispersant encapsulates the pigment by its dispersing action. Where the dispersant is polymeric (paragraph [0026] of prior art), this also meets the instantly claimed encapsulated pigment. Thus a sufficiently disclosed large part of the pigments of the prior art anticipate those of the instant claims, as noted above.

The appellant argues that acid monomer containing latex is not exemplified. Again, the disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer which may contain the instantly claimed content of acid functional monomer. The equilibrium between hydrophilic COOH and water dictates that the acid groups will be present at the water polymer interface, i.e. at the surface of the polymer particles in dispersion. There is not probative evidence to the contrary. Paragraph [0033] of Wang discloses acid functional monomers at line 10 thereof and paragraph [0042] discloses the instantly claimed amount thereof. All should understand that "hydrophilic" means and encompasses the acid functional monomers disclosed in paragraph [0033], particularly in

view of the first 3 lines of paragraph [0043]. Thus, the cited prior art discloses the instantly claimed acid functional polymer with sufficient specificity so as to anticipate it. The mole percent of the prior art clearly overlaps the instantly claimed weight percent given the relationship of moles and weight. The appellant's arguments in this regard are therefore incorrect.

Claim 1 has been cancelled and claim 12 does not depend from claim 26. The appellant argues that Wang lists 26 hydrophilic monomers of which only 4 are acidic. The first four are acidic. Acid monomers being listed first, typically used to give hydrophilic polymers most often in the entirety of aqueous polymer art, and being such a large percentage of the disclosed group meets the requirement that their disclosure is with sufficient specificity so as to anticipate the use of acid functional monomers. It is further noted that the ammonium and sodium acrylates/methacrylates are salts of such acidic monomers that give similar dispersing affects. The instant claims recite open language and therefore do not exclude bases, which necessarily give these salts of the instantly claimed polymers. The argument that there is not a teaching to use the instantly claimed acid functional polymer and encapsulated pigment in Wang's ink is rebutted by the fact that the reference teaches each of these with sufficient specificity so as to anticipate their individual use in the ink of Wang, that use being simultaneously or separately. The rejection does not rely on inherency of using the instantly claimed pigment and acid functional polymer in Wang. The examiner knows of no such case law sanctioning such use of inherency. The instant rejection relies on the fact that the prior art teaches each of these instances of polymer and pigment in their inks, the individual instances are relatively large portions of the disclosed polymers and pigments, and therefore the simultaneous use of each of

the above discussed encapsulated pigments and acid functional polymers of the instant claims is taught with sufficient specificity so as to anticipate the instantly claimed use thereof. The appellant's arguments relating to inherency in this regard are therefore mistaken. The cited caselaw does not apply to this situation either since the examiner's rejection relies on the prior art's disclosure of acid functional polymer and encapsulated pigment by Wang for use in the inks of Wang, not inherency thereof. The examiner knows of no legal basis for such use of "inherency" and did not use inherency in this instance.

The examiner does not rely on Wang's explicit disclosure of hydrophilic monomers to arrive at the use of acidic monomers according to the instant claims. As clearly seen in the above rejection, the examiner relies on Wang's disclosure of the instantly claimed amounts of the instantly claimed acidic monomers disclosed by Wang. The above rejection has provided the instantly claimed combination of elements for the reasons stated above and in this paragraph. Wang's disclosure relating to encapsulated pigments, which is discussed in detail above, is not limited to paragraph [0029]. See the entire disclosure of Wang in this regard noted above. The argument that the examiner is picking and choosing discrete, briefly mentioned possibilities and combining them in a manner not specifically taught by Wang, while more applicable than the above noted inherency argument, is incorrect because at least one third of the pigments disclosed by Wang are encapsulated (really more when the encapsulation by polymeric dispersants and grinding aids noted above are factored correctly) and the acid containing polymer is disclosed with sufficient specificity so as to anticipate its use for the reasons stated above and it is a rather large portion of the discussed hydrophilic polymers to which Wang devotes a great amount of disclosure. The skilled artisan does not read Wang with the untrained eye as the appellant's

representative would have us do. The skilled artisan understands what contribution' to stability acid functional monomers give the polymer of Wang and knows that acid functional polymer is the most often used means for stabilizing vinyl polymers in water, which is why Wang listed the acid functional hydrophiles first, and the ordinary skilled artisan understands the reasons one would use encapsulated pigment so that it can be more compatible with the binder of the ink than its natural surface would be, which is why Wang noted as only one of three options the use of encapsulated pigments and the ordinary skilled artisan in this art is of sufficient level of skill that they can add these facts together such that the disclosure of Wang anticipates the simultaneous use of encapsulated pigment and acid functional polymer of the instant claims. The appellant would have us use only very specific exemplified teachings to give anticipation, which the case law regarding anticipation clearly does not require.

The appellant's argument that the examiner's response to their arguments of page 18 of the appellant's prior appeal brief amounts to equating hydrophilic monomers with acidic monomers is not correct. The examiner has equated the acidic monomers specifically taught by Wang to acidic monomers, as clearly set forth in the rejection above and in this paragraph and more importantly in the cited disclosure of Wang that discloses the use of the instantly claimed amounts of acid monomers. The reason to pick acid monomers is set forth above. The combination of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims are disclosed with sufficient specificity so as to be anticipated individually and in combination by Wang for the reasons stated above. It does not require too much picking and choosing to arrive at the instantly claimed inventions, nor any picking and choosing when the disclosure of Wang is read by the skilled

artisan, from the disclosure of Wang, which discloses each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims as large portions of relatively small groups, from which the skilled artisan would understand why one would choose each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims. The disclosure of Wang does not exist in a vacuum. See *In re Arkley* and *In re Petering* regarding picking and choosing. An anticipating reference is not required to specify the anticipated material in a particular form, including the argued table, figure, etc. The text and general disclosure of Wang is taken as anticipating the instant claims for the reasons stated above however.

The appellant's arguments relating to the instant claims 41-44 ignore the inherency statement in regard to these claimed limitations. The instantly claimed densities appear typical of most organic compounds. The polymers of the instant claims appear to be those of Wang. Therefore the density of the polymers of Wang that fall within the scope of the instant claims, discussed above, are expected to have the densities typical of such polymers, i.e. those of the instant claims 41 and 43. Similar arguments apply to the instant claims 42 and 44. Specifically, the polymers of Wang appear to be similar to those of the instant claims, particularly where they have the instantly claimed acid content, preferred by Wang as noted above, which materially affects surface dielectric constant of the broad range of the instant claims. See MPEP 2112. There is no probative evidence that the limitations of the instant claims 41-44 are not inherently possessed by the polymers of Wang cited above. The appellant is correct that the rejection of claims 41-44 relies on inherency. The instant situation meets the case law regarding inherency

for the reasons stated above. Appellant's contention that these parameters of the instant claims 41-44 are not inherent to the polymers of Wang discussed above is not supported by probative evidence. The examiner relies on first listed acid monomers and preferred amounts thereof, which anticipates the instantly claimed polymers having acid functional groups.

The prior art is not limited to its examples. The appellant's arguments regarding the pigments and acid functional latex are therefore not persuasive and the appellant acknowledges the prior art teaching of encapsulated pigment.

Paragraph [0047] "about 10" wt% of the tetraethylene glycol, polyethylene glycol and any other humectants of Wang that are non-volatile cosolvents fall within the scope of the instant claims 13 and 27.

The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

III. Claims 12-16, 23, 25-30, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 2004/0063807) in view of the evidence given in Hawley's Condensed Chemical Dictionary.

Wang et al. disclose system for printing images comprising ink jet ink, non-porous substrate such as metal, plastic or glass, thermal printer, and heating element for heating the image once it is printed onto the non-porous substrate. It is disclosed that the ink comprises aqueous liquid vehicle, 10-60% volatile co-solvent having boiling point less than 285 °C, i.e. ethylene glycol methyl ether, propylene glycol methyl ether, triethylene, diethylene, or ethylene

glycol (humectant), etc., silicone surfactant or fluorine surfactant, and polymer latex, i.e. acid functionalized polymer colloid particulates, dispersed in the liquid vehicle wherein the polymer is formed from less than 50 mol% hydrophilic monomer such as (meth)acrylic acid and is obtained from crosslinking monomer, i.e. divinylbenzene or trimethylolpropane triacrylate. Given that the polymer is obtained from hydrophilic monomer such as (meth)acrylic acid, it is clear that the polymer would have acid group on its surface. There is no requirement that the ink comprise non-volatile solvent. It is disclosed that the heating element heats the printed image to temperatures of 50-150 °C which includes temperatures that would inherently drive off the volatile solvent as presently claimed which would inherently improve image permanence as presently claimed. For instance, given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 470), that ethylene glycol methyl ether has boiling point of 124.5 °C, it is clear that when the image is heated at 50-150 °C, the solvent, i.e. ethylene glycol methyl ether, will be driven off as required in present claim 39. There is also disclosed method of printing an image with good rub resistance comprising ink jetting from the printer the ink onto substrate followed by heating the printed image (paragraphs 7, 14-19, 21, 23 (lines 3-4), 33 (lines 1-5 and last 7 lines), 42-45, 47, 51, 53 (line 4), 54, and 103).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental

determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The instant claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise. The argument that no acid monomer containing latex is exemplified is not persuasive in that the reference is not limited to its examples and is not even required to have examples. Sections [0042]-[0043] encompass the claimed amount of acid monomer. It is not seen that the milling media of section [0024] or the polymeric dispersant of section [0026] does not encapsulate the pigments.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent verses weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to

show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited case law. The examiner notes MPEP 2112.

Case law argued by the appellants stating what is required of an anticipation rejection is noted and the requirements thereof are met in the rejection of paragraph above.

The appellant's argument that Wang does not exemplify the instantly claimed pigment cannot be persuasive. The disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer encapsulated pigment colorants as noted above and in the appellant's arguments regarding the disclosure of Wang. Appellant's argument that the disclosed list of pigments are not encapsulated does not remedy the fact that the prior art discloses encapsulated pigments and dispersant encapsulates the pigment by its dispersing action. Where the dispersant is polymeric (paragraph [0026] of prior art), this also meets the instantly claimed encapsulated pigment. Thus a sufficiently disclosed large part of the pigments of the prior art anticipate those of the instant claims, as noted above.

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and encompasses the acid functional monomers disclosed in paragraph [0033], particularly in view of the first 3 lines of paragraph [0043]. Thus, the cited prior art discloses the instantly claimed acid functional polymer with sufficient specificity so as to anticipate it. The mole percent of the prior art clearly overlaps the instantly claimed weight percent given the relationship of moles and weight. The appellant's arguments in this regard are therefore incorrect.

Claim 1 has been cancelled and claim 12 does not depend from claim 26. The appellant argues that Wang lists 26 hydrophilic monomers of which only 4 are acidic. The first four are acidic. Acid monomers being listed first, typically used to give hydrophilic polymers most often in the entirety of aqueous polymer art, and being such a large percentage of the disclosed group meets the requirement that their disclosure is with sufficient specificity so as to anticipate the use of acid functional monomers. It is further noted that the ammonium and sodium acrylates/methacrylates are salts of such acidic monomers that give similar dispersing affects. The instant claims recite open language and therefore do not exclude bases, which necessarily give these salts of the instantly claimed polymers. The argument that there is not a teaching to use the instantly claimed acid functional polymer and encapsulated pigment in Wang's ink is rebutted by the fact that the reference teaches each of these with sufficient specificity so as to anticipate their individual use in the ink of Wang, that use being simultaneously or separately. The rejection does not rely on inherency of using the instantly claimed pigment and acid functional polymer in Wang. The examiner knows of no such case law sanctioning such use of inherency. The instant rejection relies on the fact that the prior art teaches each of these instances of polymer and pigment in their inks, the individual instances are relatively large

portions of the disclosed polymers and pigments, and therefore the simultaneous use of each of the above discussed encapsulated pigments and acid functional polymers of the instant claims is taught with sufficient specificity so as to anticipate the instantly claimed use thereof. The appellant's arguments relating to inherency in this regard are therefore mistaken. The cited caselaw does not apply to this situation either since the examiner's rejection relies on the prior art's disclosure of acid functional polymer and encapsulated pigment by Wang for use in the inks of Wang, not inherency thereof. The examiner knows of no legal basis for such use of "inherency" and did not use inherency in this instance.

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disclosure. The skilled artisan does not read Wang with the untrained eye as the appellant's representative would have us do. The skilled artisan understands what contribution' to stability acid functional monomers give the polymer of Wang and knows that acid functional polymer is the most often used means for stabilizing vinyl polymers in water, which is why Wang listed the acid functional hydrophiles first, and the ordinary skilled artisan understands the reasons one would use encapsulated pigment so that it can be more compatible with the binder of the ink than its natural surface would be, which is why Wang noted as only one of three options the use of encapsulated pigments and the ordinary skilled artisan in this art is of sufficient level of skill that they can add these facts together such that the disclosure of Wang anticipates the simultaneous use of encapsulated pigment and acid functional polymer of the instant claims. The appellant would have us use only very specific exemplified teachings to give anticipation, which the case law regarding anticipation clearly does not require.

The appellant's argument that the examiner's response to their arguments of page 18 of the appellant's prior appeal brief amounts to equating hydrophilic monomers with acidic monomers is not correct. The examiner has equated the acidic monomers specifically taught by Wang to acidic monomers, as clearly set forth in the rejection above and in this paragraph and more importantly in the cited disclosure of Wang that discloses the use of the instantly claimed amounts of acid monomers. The reason to pick acid monomers is set forth above. The combination of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims are disclosed with sufficient specificity so as to be anticipated individually and in combination by Wang for the reasons stated above. It does not require too much picking and choosing to arrive at the instantly claimed

inventions, nor any picking and choosing when the disclosure of Wang is read by the skilled artisan, from the disclosure of Wang, which discloses each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims as large portions of relatively small groups, from which the skilled artisan would understand why one would choose each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims. The disclosure of Wang does not exist in a vacuum. See *In re Arkley* and *In re Petering* regarding picking and choosing. An anticipating reference is not required to specify the anticipated material in a particular form, including the argued table, figure, etc. The text and general disclosure of Wang is taken as anticipating the instant claims for the reasons stated above however.

The appellant's arguments relating to the instant claims 41-44 ignore the inherency statement in regard to these claimed limitations. The instantly claimed densities appear typical of most organic compounds. The polymers of the instant claims appear to be those of Wang. Therefore the density of the polymers of Wang that fall within the scope of the instant claims, discussed above, are expected to have the densities typical of such polymers, i.e. those of the instant claims 41 and 43. Similar arguments apply to the instant claims 42 and 44. Specifically, the polymers of Wang appear to be similar to those of the instant claims, particularly where they have the instantly claimed acid content, preferred by Wang as noted above, which materially affects surface dielectric constant of the broad range of the instant claims. See MPEP 2112. There is no probative evidence that the limitations of the instant claims 41-44 are not inherently possessed by the polymers of Wang cited above. The appellant is correct that the rejection of

claims 41-44 relies on inherency. The instant situation meets the case law regarding inherency for the reasons stated above. Appellant's contention that these parameters of the instant claims 41-44 are not inherent to the polymers of Wang discussed above is not supported by probative evidence. The examiner relies on first listed acid monomers and preferred amounts thereof, which anticipates the instantly claimed polymers having acid functional groups.

The prior art is not limited to its examples. The appellant's arguments regarding the pigments and acid functional latex are therefore not persuasive and the appellant acknowledges the prior art teaching of encapsulated pigment.

Paragraph [0047] "about 10" wt% of the tetraethylene glycol, polyethylene glycol and any other humectants of Wang that are non-volatile cosolvents fall within the scope of the instant claims 13 and 27.

It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed combinations of ingredients in the ink of Wang because they are encompassed by Wang, as discussed above, and would have been expected to give the printing system of Wang and its disclosed properties. No unexpected results are seen which are commensurate in scope with the instant claims and the cited prior art.

Wang does not disclose the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28. It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28 because they are encompassed by the disclosure of tetraethylene glycol and polyethylene glycol of paragraph [0044], the recitation of

“at least one water miscible cosolvent”, and the lower amounts of cosolvent of paragraph [0045] encompassing the instantly claimed amounts of non-volatile cosolvent of the instant claims 14 and 28 where mixtures of solvents are used, with the non-volatile cosolvent being expected to remain in the composition under heating to continue functioning as cosolvent and giving the properties of cosolvents, such as reduction of precipitation of non-water soluble compounds, to the printed inks.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent versus weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited caselaw. The examiner notes MPEP 2112. The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Appellant's assertion that this rejection negates the 102 above are meritless since anticipation is the ultimate in obviousness and the appellant's representative is undoubtedly aware that one may present alternative legal theories without

undermining the other. This caselaw is superior to that cited by the appellant. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

Wang does not disclose the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28. It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28 because they are encompassed by the disclosure of tetraethylene glycol and polyethylene glycol of paragraph [0044], the recitation of “at least one water miscible cosolvent”, and the lower amounts of cosolvent of paragraph [0045] encompassing the instantly claimed amounts of non-volatile cosolvent of the instant claims 14 and 28 where mixtures of solvents are used, with the non-volatile cosolvent being expected to remain in the composition under heating to continue functioning as cosolvent and giving the properties of cosolvents, such as reduction of precipitation of non-water soluble compounds, to the printed inks.

Appellant’s arguments regarding what is required of an obviousness rejection are noted. Furthermore, MPEP 2141, particularly the “KSR” decision therein are noted. The requirements of an obviousness rejection are met by the rejection of paragraph 9(B) above. for the reasons stated therein and in this paragraph.

Appellant’s arguments relating to the Wang reference alone are rebutted above. Furthermore, arguments relating to secondary references do not apply to the rejection stated in

this paragraph. The reasons why the ordinary skilled artisan would use the instantly claimed combinations of ingredients from the disclosure of Wang are because Wang sets forth the use of these components in thermal inkjet printing of non-porous substrates as noted above and the ordinary skilled artisan would have expected the instantly claimed combinations of ingredients to give the properties described by Wang and the properties known to be attributable to the individual components themselves, as discussed above regarding acid functional polymers and encapsulated pigments. Again, acid functional monomer in the instantly claimed amount is anticipated by Wang because the amount is preferred and the acid monomer is first listed of a relatively small group of monomers. There is no showing of unexpected results over the disclosure of Wang in a manner commensurate in scope with the cited prior art and the instant claims. The ordinary skilled artisan would have expected good rub resistance, good waterfastness, lightfastness, abrasion resistance, good adhesion to non-absorbing substrates and other improved properties of Wang from the instantly claimed combinations of ingredients disclosed by Wang because Wang states that these ingredients may be used in their compositions, does not exclude the instantly claimed combinations of ingredients, and discloses that their inks have the above discussed properties noted by the appellant. This meets the requirements of a prima facie case of obviousness without use of improper hindsight because it relies solely on the disclosure of Wang without need for that of the appellant's because all of the instantly claimed components are disclosed by Wang for use in Wang's inks, including in the instantly claimed combinations. Thus, the ordinary skilled artisan would have expected the instantly claimed inventions, which are encompassed by Wang as noted above, to give the properties discussed by Wang and noted by the appellant. Wang is the motivation for this, not

the appellant's specification. The expectation of success and other requirements of the KSR decision cited in MPEP 2141 are clearly met by the above rejection. Again, the apparent reason to use the instantly claimed components together is because they are each disclosed by Wang, in relatively small lists of components, e.g. encapsulated pigment and acid functional polymer, for use in the inks and printing methods and systems of Wang, which fall within the scope of those of the instant claims. They are expected to work properly and to give the properties disclosed by Wang and noted by the appellant.

Claims 41-44 are inherently encompassed by Wang, as noted above. See MPEP 2112. The requirements of the case law cited by the appellant regarding inherency is met for the reasons stated above regarding inherency of the limitations of the instant claims 41-44 in the polymers of Wang. Again there is not probative evidence to the contrary. Arguments that the examiner was not relying on inherency were clearly directed to the appellant's prior arguments that the examiner's statements regarding use of the instantly claimed encapsulated pigment and acid functional polymer from the disclosure of Wang used "inherency". The examiner's statements regarding use of the instantly claimed encapsulated pigment and acid functional polymer from the disclosure of Wang per se do not use inherency. The properties of the instant claims 41-44 were clearly stated to be inherent in the polymer of Wang, as discussed above. Appellant's arguments that the examiner argued that he did not use inherency regarding the properties of the instant claims 41-44 do not meet the above stated rejection because they are an incorrect characterization of the above stated rejection above.

The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

IV. Claims 12-16, 18, 23, 25-30, 32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (U.S. 2004/0063807) in view of Miyabayashi (U.S. 2004/0229974).

Wang et al. disclose system for printing images comprising ink jet ink, non-porous substrate such as metal, plastic or glass, thermal printer, and heating element for heating the image once it is printed onto the non-porous substrate. It is disclosed that the ink comprises aqueous liquid vehicle, 10-60% volatile co-solvent having boiling point less than 285 °C, i.e. ethylene glycol methyl ether, propylene glycol methyl ether, triethylene, diethylene, or ethylene glycol (humectant), etc., silicone surfactant or fluorine surfactant, and polymer latex, i.e. acid functionalized polymer colloid particulates, dispersed in the liquid vehicle wherein the polymer is formed from less than 50 mol% hydrophilic monomer such as (meth)acrylic acid and is obtained from crosslinking monomer, i.e. divinylbenzene or trimethylolpropane triacrylate. Given that the polymer is obtained from hydrophilic monomer such as (meth)acrylic acid, it is clear that the polymer would have acid group on its surface. There is no requirement that the ink comprise non-volatile solvent. It is disclosed that the heating element heats the printed image to temperatures of 50-150 °C which includes temperatures that would inherently drive off the volatile solvent as presently claimed which would inherently improve image permanence as presently claimed. For instance, given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 470), that ethylene glycol methyl ether has boiling point of 124.5 °C, it is clear that when the image is heated at 50-150 °C, the solvent, i.e. ethylene glycol methyl ether, will be driven off as required in present claim 39. There is also disclosed

method of printing an image with good rub resistance comprising ink jetting from the printer the ink onto substrate followed by heating the printed image (paragraphs 7, 14-19, 21, 23 (lines 3-4), 33 (lines 1-5 and last 7 lines), 42-45, 47, 51, 53 (line 4), 54, and 103).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The instant claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise. The argument that no acid monomer containing latex is exemplified is not persuasive in that the reference is not limited to its examples and is not even required to have examples. Sections [0042]-[0043] encompass the claimed amount of acid monomer. It is not seen that the milling media of section [0024] or the polymeric dispersant of section [0026] does not encapsulate the pigments.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent verses weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited case law. The examiner notes MPEP 2112.

Case law argued by the appellants stating what is required of an anticipation rejection is noted and the requirements thereof are met in the rejection of above.

The appellant's argument that Wang does not exemplify the instantly claimed pigment cannot be persuasive. The disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer encapsulated pigment colorants as noted above and in the appellant's arguments regarding the disclosure of Wang. Appellant's argument that the disclosed list of pigments are not encapsulated does not remedy the fact that the prior art discloses encapsulated pigments and dispersant encapsulates the pigment by its dispersing action. Where the dispersant is polymeric (paragraph [0026] of prior

art), this also meets the instantly claimed encapsulated pigment. Thus a sufficiently disclosed large part of the pigments of the prior art anticipate those of the instant claims, as noted above.

The appellant argues that acid monomer containing latex is not exemplified. Again, the disclosure must be considered for all that it teaches. The prior art is not even required to have examples. The prior art clearly discloses polymer which may contain the instantly claimed content of acid functional monomer. The equilibrium between hydrophilic COOH and water dictates that the acid groups will be present at the water polymer interface, i.e. at the surface of the polymer particles in dispersion. There is not probative evidence to the contrary. Paragraph [0033] of Wang discloses acid functional monomers at line 10 thereof and paragraph [0042] discloses the instantly claimed amount thereof. All should understand that "hydrophilic" means and encompasses the acid functional monomers disclosed in paragraph [0033], particularly in view of the first 3 lines of paragraph [0043]. Thus, the cited prior art discloses the instantly claimed acid functional polymer with sufficient specificity so as to anticipate it. The mole percent of the prior art clearly overlaps the instantly claimed weight percent given the relationship of moles and weight. The appellant's arguments in this regard are therefore incorrect.

Appellant's statements regarding dependence of claims 1 and 26 of page 16, section ii of their brief appears to be in error. Claim 1 has been cancelled and claim 12 does not depend from claim 26. The appellant argues that Wang lists 26 hydrophilic monomers of which only 4 are acidic. The first four are acidic. Acid monomers being listed first, typically used to give hydrophilic polymers most often in the entirety of aqueous polymer art, and being such a large percentage of the disclosed group meets the requirement that their disclosure is with sufficient

specificity so as to anticipate the use of acid functional monomers. It is further noted that the ammonium and sodium acrylates/methacrylates are salts of such acidic monomers that give similar dispersing affects. The instant claims recite open language and therefore do not exclude bases, which necessarily give these salts of the instantly claimed polymers. The argument that there is not a teaching to use the instantly claimed acid functional polymer and encapsulated pigment in Wang's ink is rebutted by the fact that the reference teaches each of these with sufficient specificity so as to anticipate their individual use in the ink of Wang, that use being simultaneously or separately. The rejection does not rely on inherency of using the instantly claimed pigment and acid functional polymer in Wang. The examiner knows of no such case law sanctioning such use of inherency. The instant rejection relies on the fact that the prior art teaches each of these instances of polymer and pigment in their inks, the individual instances are relatively large portions of the disclosed polymers and pigments, and therefore the simultaneous use of each of the above discussed encapsulated pigments and acid functional polymers of the instant claims is taught with sufficient specificity so as to anticipate the instantly claimed use thereof. The appellant's arguments relating to inherency in this regard are therefore mistaken. The cited caselaw does not apply to this situation either since the examiner's rejection relies on the prior art's disclosure of acid functional polymer and encapsulated pigment by Wang for use in the inks of Wang, not inherency thereof. The examiner knows of no legal basis for such use of "inherency" and did not use inherency in this instance.

The examiner does not rely on Wang's explicit disclosure of hydrophilic monomers to arrive at the use of acidic monomers according to the instant claims. As clearly seen in the above rejection, the examiner relies on Wang's disclosure of the instantly claimed amounts of the

instantly claimed acidic monomers disclosed by Wang. The above rejection has provided the instantly claimed combination of elements for the reasons stated above and in this paragraph. Wang's disclosure relating to encapsulated pigments, which is discussed in detail above, is not limited to paragraph [0029]. See the entire disclosure of Wang in this regard noted above. The argument that the examiner is picking and choosing discrete, briefly mentioned possibilities and combining them in a manner not specifically taught by Wang, while more applicable than the above noted inherency argument, is incorrect because at least one third of the pigments disclosed by Wang are encapsulated (really more when the encapsulation by polymeric dispersants and grinding aids noted above are factored correctly) and the acid containing polymer is disclosed with sufficient specificity so as to anticipate its use for the reasons stated above and it is a rather large portion of the discussed hydrophilic polymers to which Wang devotes a great amount of disclosure. The skilled artisan does not read Wang with the untrained eye as the appellant's representative would have us do. The skilled artisan understands what contribution' to stability acid functional monomers give the polymer of Wang and knows that acid functional polymer is the most often used means for stabilizing vinyl polymers in water, which is why Wang listed the acid functional hydrophiles first, and the ordinary skilled artisan understands the reasons one would use encapsulated pigment so that it can be more compatible with the binder of the ink than its natural surface would be, which is why Wang noted as only one of three options the use of encapsulated pigments and the ordinary skilled artisan in this art is of sufficient level of skill that they can add these facts together such that the disclosure of Wang anticipates the simultaneous use of encapsulated pigment and acid functional polymer of the instant claims.

The appellant would have us use only very specific exemplified teachings to give anticipation, which the case law regarding anticipation clearly does not require.

The appellant's argument that the examiner's response to their arguments of page 18 of the appellant's prior appeal brief amounts to equating hydrophilic monomers with acidic monomers is not correct. The examiner has equated the acidic monomers specifically taught by Wang to acidic monomers, as clearly set forth in the rejection above and in this paragraph and more importantly in the cited disclosure of Wang that discloses the use of the instantly claimed amounts of acid monomers. The reason to pick acid monomers is set forth above. The combination of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims are disclosed with sufficient specificity so as to be anticipated individually and in combination by Wang for the reasons stated above. It does not require too much picking and choosing to arrive at the instantly claimed inventions, nor any picking and choosing when the disclosure of Wang is read by the skilled artisan, from the disclosure of Wang, which discloses each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims as large portions of relatively small groups, from which the skilled artisan would understand why one would choose each of the instantly claimed encapsulated monomer, acid functional polymer, thermal inkjet printhead and non-porous media of the instant claims. The disclosure of Wang does not exist in a vacuum. See *In re Arkley* and *In re Petering* regarding picking and choosing. An anticipating reference is not required to specify the anticipated material in a particular form, including the argued table, figure, etc. The text and general

disclosure of Wang is taken as anticipating the instant claims for the reasons stated above however.

The appellant's arguments relating to the instant claims 41-44 ignore the inherency statement in regard to these claimed limitations. The instantly claimed densities appear typical of most organic compounds. The polymers of the instant claims appear to be those of Wang. Therefore the density of the polymers of Wang that fall within the scope of the instant claims, discussed above, are expected to have the densities typical of such polymers, i.e. those of the instant claims 41 and 43. Similar arguments apply to the instant claims 42 and 44. Specifically, the polymers of Wang appear to be similar to those of the instant claims, particularly where they have the instantly claimed acid content, preferred by Wang as noted above, which materially affects surface dielectric constant of the broad range of the instant claims. See MPEP 2112. There is no probative evidence that the limitations of the instant claims 41-44 are not inherently possessed by the polymers of Wang cited above. The appellant is correct that the rejection of claims 41-44 relies on inherency. The instant situation meets the case law regarding inherency for the reasons stated above. Appellant's contention that these parameters of the instant claims 41-44 are not inherent to the polymers of Wang discussed above is not supported by probative evidence. The examiner relies on first listed acid monomers and preferred amounts thereof, which anticipates the instantly claimed polymers having acid functional groups.

The prior art is not limited to its examples. The appellant's arguments regarding the pigments and acid functional latex are therefore not persuasive and the appellant acknowledges the prior art teaching of encapsulated pigment.

Paragraph [0047] “about 10” wt% of the tetraethylene glycol, polyethylene glycol and any other humectants of Wang that are non-volatile cosolvents fall within the scope of the instant claims 13 and 27.

The difference between Wang et al. and the present claimed invention is the requirement in the claims of specific amount of crosslinking monomer.

Wang et al. disclose that the polymer is obtained from crosslinking monomer, however, there is no disclosure of the amount of crosslinking monomer utilized.

Miyabayashi, which is drawn to ink jet ink, discloses the use of polymer fine particles in the form of resin emulsion, i.e. acid functionalized polymer colloid particulates, where the resin has acid groups on its surface and is formed from 1-10% acid monomer and 0.2-4% crosslinking monomer wherein the motivation for using 0.2-4% crosslinking monomer is in order to improve ejection stability (paragraph 334-336 and 354).

In light of the motivation for using specific amount of crosslinking monomer disclosed by Miyabayashi as described above, it therefore would have been obvious to one of ordinary skill in the art to utilize polymer obtained from that amount of crosslinking monomer in the ink of Wang et al. in order to produce ink with improved ejection stability, and thereby arrive at the claimed invention.

Appellant's argument regarding the instantly claimed encapsulated pigment with the instantly claimed acid containing polymer is addressed in paragraph 3 above. The examiner's arguments in this regard also apply here. Wang encompasses the combination, as discussed in paragraph 3 above.

The appellant has shown no unexpected results stemming from the instantly claimed combinations of ingredients in a manner commensurate in scope with the cited prior art and the instant claims.

Wang does not disclose the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28. It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed the instantly claimed amount of non-volatile cosolvents of the instant claims 14 and 28 because they are encompassed by the disclosure of tetraethylene glycol and polyethylene glycol of paragraph [0044], the recitation of "at least one water miscible cosolvent", and the lower amounts of cosolvent of paragraph [0045] encompassing the instantly claimed amounts of non-volatile cosolvent of the instant claims 14 and 28 where mixtures of solvents are used, with the non-volatile cosolvent being expected to remain in the composition under heating to continue functioning as cosolvent and giving the properties of cosolvents, such as reduction of precipitation of non-water soluble compounds, to the printed inks.

The appellant's arguments regarding what is required in an anticipation rejection are noted. However, it is not seen that these requirements are not met in the above stated rejection. The reference is not limited to its examples. Indeed, examples are not even required. Arguments regarding only the examples of the reference are therefore not commensurate in scope with the full disclosure of the reference. Arguments regarding mole percent verses weight percent are not persuasive since the two are related by methods which are clear to all in this art. Given the small list of hydrophilic monomers and the fact that the first mentioned and claimed monomers (claim 16) are acidic, the acid monomers are disclosed with sufficient specificity so as to anticipated the

use of acidic monomers. Inherency is not required to arrive at the combination but rather to show how such polymers necessarily always orient themselves in aqueous systems. There is no probative evidence to the contrary, including in the recited caselaw.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391. Appellant's assertion that this rejection negates the 102 above are meritless since anticipation is the ultimate in obviousness and the appellant's representative is undoubtedly aware that one may present alternative legal theories without undermining the other. This caselaw is superior to that cited by the appellant. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

Appellant's arguments to "Miyabashi" are taken as referring to "Miyabayashi".

Appellant's arguments relating to Miyabayashi alone does not address the rejection above because this rejection is based on the combined teachings of Wang and Miyabayashi, not Miyabayashi alone. See MPEP 707.07(f) "Unpersuasive Argument: Arguing Against References Individually

In response to appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)."

The appellant does not argue with the stated reason Miyabayashi is cited, e.g. to state that the amount of crosslinking of the instant claims 18 and 32 would have been obvious in view of the teaching to crosslink of Wang and the amount thereof of Miyabayashi. Appellant's arguments that Miyabayashi does not correct the deficiencies of Wang is disagreed with relating to the stated purpose Miyabayashi is cited.

The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

V. Claims 12-15, 18, 23, 25-29, 32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. (U.S. 2003/0069329) in view of Hawley's Condensed Chemical Dictionary and either Kato et al. (U.S. 6,536,890) or Moffatt et al. (U.S. 5,207,824).

Kubota et al. disclose system for printing images comprising ink jet ink, ink jet printer, non-porous substrate, and heating element. It is disclosed that the ink jet ink comprises aqueous liquid vehicle comprising 0.5-40% volatile co-solvent having boiling point below 285 °C, i.e. ethanol, diethylene glycol (humectant), etc., resin emulsion, i.e. acid functionalized polymer colloid particulates, dispersed in the liquid vehicle where the resin has functional groups on its surface including carboxyl groups and is formed from 0.2-4% crosslinking monomer, and pigment dispersed in the liquid vehicle wherein the pigment is polymer encapsulated pigment. There is no requirement that the ink comprise non-volatile solvent. Given that it is well known, as evidenced by Hawley's Condensed Chemical Dictionary (page 459), that ethanol has boiling point of 78.3 °C, it is clear that when the image is heated at 80 °C, the solvent, i.e. ethanol, will

be driven off as required in present claim 39. There is also disclosed method wherein the ink is ejected onto non-porous substrate such as glass, plastic, or coated paper from printer followed by heating the printed image at 80 °C (paragraphs 24-29, 36, 40, 72, 80-81, 101-102, 112-113, 115 (lines 1-4), 117, 166-167, 178, 228-230, 253, 263-264-550-551, 555-558, and 565). Attention is drawn to Ink 4 in Table F2 which discloses ink comprising polymer encapsulated pigment, resin emulsion wherein the resin is obtained from 3% acid monomer and 0.4% crosslinking monomer, and volatile solvent having boiling point below 285 °C, i.e. glycerin, diethylene glycol, and N-methyl-2-pyrrolidone, and to Table F5 which discloses that such ink has good rub resistance

The difference between Kubota et al. and the present claimed invention is the requirement in the claims of the use of thermal ink jet printer.

Kubota et al. discloses the use of ink jet printer, however, there is no specific disclosure of thermal ink jet printer.

Kato et al., which is drawn to ink jet ink, disclose the use of thermal ink jet printer wherein the ink is ejected on stable basis with no satellite dots produced (col.26, lines 19-25).

Alternatively, Moffatt et al., which is drawn to ink jet ink, disclose the use of thermal ink jet printer given that this printer offers a low cost, high print quality, comparatively noise-free option to other types of printers (col. 1, lines 12-14).

In light of the motivation for using thermal ink jet printer disclosed by Kato et al. or Moffatt et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such printer as the printer in Kubota et al. in order to stably print ink and produce

no satellite dots or alternatively, in order to print noise free with low cost and high print quality, and thereby arrive at the claimed invention.

Specifically, appellant argues that Kubota et al. fails to disclose printing ink jet ink comprising polymer encapsulated pigment and acid functionalized colloid particulates dispersed in liquid vehicle having volatile co-solvent wherein the image is heated after printing. As evidence to support this position, appellant points to examples of Kubota et al. that show ink comprising polymer encapsulated pigment but wherein such ink is not heated after printing or that show ink that is heated after printing but wherein the ink does not comprise polymer encapsulated pigment.

However, the examples are but a few preferred embodiments of Kubota et al. It is noted, "appellant must look to the whole reference for what it teaches. Appellant cannot merely rely on the examples and argue that the reference did not teach others," In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). Further, "non-preferred disclosures can be used. A non-preferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims", In re Nehrenberg, 280 F.2d 161, 126 USPQ 383 (CCPA i 960). A fair reading of Kubota et al. as a whole clearly discloses ink comprising polymer encapsulated pigment (paragraph 72), acid functionalized colloid particles (paragraphs 102, 112, and 117), and liquid vehicle (paragraphs 162-168) as presently claimed wherein the image formed from such ink is heated after printing (paragraphs 35 and 230).

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from

the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391.

The section of Kato relied on to rebut its use above shows clearly that it is within the ability of the ordinary skilled artisan to determine when thermal printing is possible and why to do it. The argued disclosure of Kato is therefore taken as supporting this rejection rather than rebutting it. This argument is therefore not persuasive. The rationale regarding no satellite dots seems to be motivation, contrary to the appellant's arguments that there is not reason to combine Kato with Kubota. Impermissible hindsight and circular logic are not used, contrary to the appellant's arguments. Note KSR, cited above, in this regard also. The above logic is sufficient to rebut the

appellant's remaining arguments on this issue. Kato clearly shows that the argued "greater care" is within the ability of the ordinary skilled artisan to do and determine. The benefit is clearly worth the effort given the desirability of clear printed images. Given the similarities of the compositions discussed above to those of the instant claims, it is expected that the instantly claimed parameters are necessarily inherent to the prior art compositions discussed above. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

The appellant argues that thermal ink jet architecture often requires additional consideration and experimentation. The disclosure of Kubota is silent regarding the particulars of the ink jet print head. It certainly does not teach away from thermal print heads. There is no reason seen why the ink of Kubota would not have been expected to function in thermal ink jet heads particularly considering its similarities to the inks of Moffatt and Kato. "May" of Kato, column 26, lines 25-28 indicates that such modification is not necessarily required and the disclosure of Kato indicates that it is within the ability of the ordinary skilled artisan to make the requisite modifications although it is not seen that such modifications are required of the inks of Kubota. Moffatt provides further motivation to use thermal ink jet head as that of Kubota, which again, does not exclude such a print head. The argument that there is not motivation to use the ink of Kubota with a thermal inkjet head ignores the motivation cited above.

The appellant's argument that the examiner argued it would have been obvious to use the ink of Kubota in a thermal inkjet head because it is the same ink as the appellant's ignores the

actual rejection of above. Arguments by the appellant in this regard are therefore incorrect because they ignore the actual rejection made above.

The above argument that Kubota does not teach the type of printhead is true. The examiner maintains that this is clear evidence that Kubota intended to encompass all well known printhead types those being thermal print heads and piezo printheads. Appellant's arguments that this logic is flawed is not supported by evidence. The examiner therefore maintains this aspect of the above rejection for the reasons stated above. The appellant's argument in this regard is not supported by the disclosures of the primary reference, which does not teach away from using thermal ink jet heads, nor the secondary references which give no indication that the compositions of Kubota would not be useful for inkjet printing with thermal inkjet heads. This contradicts the appellant's statements of what the skilled artisan would know/expect regarding using thermal inkjet heads with the inks of Kubota. This also provides the reason to expect that the ink of Kubota discussed above can be successfully printed with a thermal inkjet head and obtain the benefits thereof taught by Moffatt or Kato as cited above. While Kato may establish that not every ink is thermal inkjet head printable, it does not establish this of the ink of Kubota, which does not teach away from using thermal inkjet heads, and it shows that the modifications required to make an ink printable with thermal inkjet heads are within the ability of the skilled artisan to make. Moffatt is also cited in this regard.

Stated failures of Kubota regarding the ink components are rebutted by the clear teachings of Kubota cited above. There is no reason seen that encapsulated pigments would be any more negatively affected by thermal inkjet head printing than other pigments, including the

various organic pigments, and the polymer latex and dispersants present in the ink that is expected to encapsulate the pigment.

The argument that Kato does not teach each and every element ignores its stated purpose in the rejection above. The case law regarding this argument against Kato alone is cited above and repeated herein. The appellant again ignores the teachings of Moffatt in this regard also.

There is not showing of unexpected results stemming from one of the primary means of inkjet printing, e.g. using a thermal inkjet head, with the instantly claimed ink in the instantly claimed inventions in a manner commensurate in scope with the cited prior art and the instant claims.

Kubota does not disclose the instantly claimed amount of non-volatile cosolvents of the instant claims 13-14 and 27-28. It would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed the instantly claimed amount of non-volatile cosolvents of the instant claims 13-14 and 27-28 because they are encompassed by the disclosure of polyethylene glycol and polypropylene glycol of paragraph [0164] and triethylene glycol and tetraethylene glycol (both high boiling point polyethylene glycols) of paragraph [0166], the recitation of "These water-soluble organic solvents may be used alone or as a mixture of two or more.", and the lower amounts of solvent of paragraph [0168] encompassing the instantly claimed amounts of non-volatile cosolvent of the instant claims 13-14 and 27-28 where mixtures of solvents are used, with the non-volatile cosolvent being expected to remain in the composition under heating to continue functioning as cosolvent and giving the properties of cosolvents, such as reduction of precipitation of non-water soluble compounds, to the printed inks.

The limitations of the instant claims 41-44 are expected to be necessarily inherent in the polymers of Kubota for the reasons stated above, e.g. their similarities to the instantly claimed polymers and the relatively broad ranges of the instant claims 41-44. See MPEP 2112. There is no probative evidence to the contrary. The argued case law regarding inherency is noted and the requirements thereof met in the rejection of above.

The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

VI. Claims 12-16, 18, 23, 25-30, 32, 37, and 39-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al. in view of Hawley's Condensed Chemical Dictionary and either Kato et al. or Moffatt et al. as applied to claims 12-15, 18, 23, 25-29, 32, 37, and 39-40 above, and further in view of either Miyamoto et al. (U.S. 2004/0055508) or Wang et al. (U.S. 2004/0063807).

The difference between Kubota et al. in view of Hawley's Condensed Chemical Dictionary and either Kato et al. or Moffatt et al. and the present claimed invention is the requirement in the claims of silicone surfactant or fluorine surfactant. Miyamoto et al., which is drawn to ink jet ink disclose the use of silicone as anti-foaming agent to prevent bubbles from being generated in the ink and/or allowing generated bubbles to disappear (paragraphs 183-184).

Alternatively, Wang et al., which is drawn to ink jet ink, disclose the use of silicone surfactant or fluorinated surfactant in order to control surface tension and thus, the jet velocity, separation

length of droplets, drop size, and stream stability of the ink (paragraph 46).

In light of the motivation for using silicone surfactant or fluorinated surfactant disclosed by Miyamoto et al. or Wang et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such surfactant in the ink of Kubota et al. in order to produce ink with no foaming or, alternatively, to produce ink with suitable surface tension, and thereby arrive at the claimed invention.

Specifically, appellant argues that Kubota et al. fails to disclose printing ink jet ink comprising polymer encapsulated pigment and acid functionalized colloid particulates dispersed in liquid vehicle having volatile co-solvent wherein the image is heated after printing. As evidence to support this position, appellant points to examples of Kubota et al. that show ink comprising polymer encapsulated pigment but wherein such ink is not heated after printing or that show ink that is heated after printing but wherein the ink does not comprise polymer encapsulated pigment.

However, the examples are but a few preferred embodiments of Kubota et al. It is noted, "appellant must look to the whole reference for what it teaches. Appellant cannot merely rely on the examples and argue that the reference did not teach others," In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). Further, "non-preferred disclosures can be used. A nonpreferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims", In re Nehrenberg, 280 F.2d 161,126 USPQ 383 (CCPA 1960). A fair reading of Kubota et al. as a whole clearly discloses ink comprising polymer encapsulated pigment (paragraph 72), acid functionalized colloid particles (paragraphs 102, 112,

and 117), and liquid vehicle (paragraphs 162-168) as presently claimed wherein the image formed from such ink is heated after printing (paragraphs 35 and 230).

Appellant also argues that there is no motivation to combine Kubota et al. with Kato et al. given that, as disclosed on page 14, line 30-page 15, line 6 of the present specification, configuring a system including a thermal ink jet ink architecture often requires additional consideration and experimentation of at least selection of ink components. Appellant argues that Kato et al. also disclose the difficulty of working with thermal ink jet architecture.

However, while the present specification discloses that polymer colloid particulates effective for use in piezo ink jet system are not necessarily effective in thermal ink jet systems, firstly, it is noted that given that Kubota et al. disclose ink jet ink identical to that presently claimed, it would have been obvious to one of ordinary skill in the art that such ink would also be suitable for use in thermal ink jet printer as presently claimed. Secondly, it is noted that there is no requirement in Kubota et al. that the ink is suitable for use in piezo ink jet system and thus, one of ordinary skill in the art would not expect that such ink would not be suitable for use in thermal ink jet system. Additionally, while col. 26, lines 25-28 of Kato et al. disclose that when the ink is used with an ink jet printing method, thermal properties of the ink may have to be regulated, this does not teach against using inks in thermal ink jet system only that they have to be regulated.

While it is agreed that Kato et al. disclose the use of separate liquid composition and ink, however, Kato et al. disclose the use of the ink in a thermal printer and further, the teaching of

Kato et al. with respect to the thermal printer, "ink-jet recording method of the type adapted to eject ink by utilizing the foaming phenomenon of ink arises when thermal energy is applied hereto because ink is ejected on a stable basis and no satellite drops will be produced", appears to refer to the printing apparatus itself not the ink. That is, it is the printer which allows the ink to be ejected on a stable basis and for no satellite drops to be produced. Therefore, it would have been obvious to one of ordinary skill in the art to utilize ink, including that disclosed by Kubota et al., in such thermal ink jet printer, in order to stably print ink and produce no satellite dots, and thereby arrive at the claimed invention.

The recitations regarding surface acid groups would be necessarily expected of the polymers of the reference in the above discussed aqueous phase. The ionic/hydrophilic groups of dispersions orient toward the hydrophilic aqueous phase and the hydrophobes orient away from the hydrophilic aqueous phase as is well known and established in aqueous dispersion arts. Thus, the acid groups of the reference polymer are expected to necessarily and inherently give the instantly claimed surface acid groups. The PTO has no facilities to make such experimental determinations. The burden is therefore on the appellant to show that the reference polymer does not have such surface acid groups necessarily and inherently. The newly presented claims 41-44 present limitations that appear to be a function of the polymer type and identity of the examined claims. The densities appear typical of organic polymers. The ionic surfaces of the acid functional polymers will be conductive due to the ions on them which will necessarily and inherently give very low surface dielectric constants. The burden is therefore on the appellant to show that the reference polymer does not have the instantly claimed densities and surface

dielectric constants necessarily and inherently. The reference is otherwise silent regarding these parameters and the examiner has no way of determining what they are otherwise.

The above rejection does not use impermissible hindsight and meets the requirements of *Graham v. Deere* for a prima facie case of obviousness. See MPEP 2141, particularly KSR, 550 U.S. at ___, 82 USPQ2d at 1391.

The section of Kato relied on to rebut its use above shows clearly that it is within the ability of the ordinary skilled artisan to determine when thermal printing is possible and why to do it. The argued disclosure of Kato is therefore taken as supporting this rejection rather than rebutting it. This argument is therefore not persuasive. The rationale regarding no satellite dots seems to be motivation, contrary to the appellant's arguments that there is not reason to combine Kato with Kubota. Impermissible hindsight and circular logic are not used, contrary to the appellant's arguments. Note KSR, cited above, in this regard also. The above logic is sufficient to rebut the appellant's remaining arguments on this issue. Kato clearly shows that the argued "greater care" is within the ability of the ordinary skilled artisan to do and determine. The benefit is clearly worth the effort given the desirability of clear printed images. Given the similarities of the compositions discussed above to those of the cited prior art, it is expected that the instantly claimed parameters are necessarily inherent to the prior art compositions discussed above. There is no probative evidence that those parameters are not necessarily inherent to the instantly claimed invention given the other similarities between the instant claims and the cited prior art. The argued parameters are things which are not typically mentioned in the prior art nor measured. See MPEP 2112.

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The appellant's arguments have been fully considered but are not persuasive for the reasons stated herein. This rejection should therefore be affirmed.

(10) Response to Argument

I. The following response applies to the arguments regarding the rejection of paragraph (9) I. above:

The statements of paragraph (9) I. above stand on their own in rebutting the appellant's arguments. Particularly, none of the references to 0.1 wt.% reference the non-volatile co-solvent of the instant claims. The instant specification, page 10, line 17 is noted, but references the additional co-solvent, not the non-volatile co-solvent of the instant claims per se. That section also fails to mention the upper limit of the instantly claimed non-volatile co-solvent of the instant claims. It therefore is not seen that it is intended to be directed to the range of amounts of the instantly claimed non-volatile co-solvent. The instant specification, page 9, lines 8-10 and page 10, lines 1-4 et seq. it taken as the reference in the instant specification regarding amounts of the instantly claimed non-volatile co-solvent and this section of the specification does not support the newly created range due to the recitation of "from 0.1 wt% to" of the instant claims.

This rejection should therefore be affirmed.

II. The following response applies to the arguments regarding the rejection of paragraph (9) II. above:

As stated in paragraph (9) II. above, Wang does teach each and every element of the instant claims, expressly or inherently.

The arguments regarding encapsulated pigments ignores the fact that there are actually three classes of pigments disclosed broadly at paragraph [0023], which apply to the actual pigments of e.g. paragraph [0029] equally. "Encapsulated" pigments are particularly noted

therein. Furthermore, it is clear from the necessary and inherent action of the dispersant on the pigment that the dispersants will necessarily encapsulate the pigment and pigment dispersants are often polymeric (See paragraph [0026].) and will also necessarily give polymer encapsulated pigment. Thus, in the general description of the pigments of Wang, e.g. paragraph [0023], at least 1/3 rd thereof will be polymer encapsulated pigments. Appellant's arguments in this regard are therefore rebutted.

Interpreting the instant claims in their broadest reasonable scope in view of the instant specification, it is seen that the instant claims recite "comprising" and the open language "including" regarding the instantly claimed ink per se. The ink of the instant claims is therefore open to other components, including base. It is further noted that the instant specification uses base, e.g. KOH in example 1, i.e. all of the exemplified inks. The base will necessarily neutralize the acid groups of the instantly claimed polymer. Thus, consistent with the instant specification and the instantly claimed open language, the recited "acid-functionalized polymer" includes the salts thereof. Wang, paragraph [0043] among the other sections of Wang that disclose monomers, discloses a large number of acid containing monomers which give the instantly claimed acid-functionalized polymers as well as salts thereof, which as stated above are taken to be included by the instant claims for the reasons stated above, particularly the appellant's example 1, more particularly its use of KOH which neutralizes acid. Thus, a large portion of the hydrophilic monomers of Wang give the instantly claimed acid-functionalized polymers. The preferred ranges "less than 20 mole%" and "less than 5 mole %", coupled with the molecular weights of the polymers and monomers so as to give the instantly claimed wt% of acid monomers, clearly encompasses the instantly claimed amount of acid monomers in a

manner sufficient to anticipate this aspect of the instant claims by virtue of its large overlap with the scope of the instant claims. Contrary to the appellant's arguments, this is not an inherency rejection and inherency case law does not apply. No modification of the prior art is needed since the instantly argued aspect of the instant claims is specifically disclosed with sufficient specificity so as to anticipate the instantly claimed acid-functionalized polymer including the amount of acid monomers, for the reasons stated above. As stated in paragraph (9) II. above, the cited reference does disclose the instantly claimed invention, expressly, regarding those limitations which are said to be expressly taught, and inherently, regarding those limitations, such as those of the instant claims 41-44, which are said to be inherently taught, by the cited prior art. The above rejection does not contain too much picking and choosing for an anticipation rejection. Regarding the instant claims 41 and 43, the density range is so broad as to encompass all polymer densities the examiner has ever seen in the addition polymers of the nature of those of Wang. The appellant has provided no probative evidence to the contrary or any evidence that the polymers of Wang do not necessarily inherently have densities in these broad ranges. The examiner further notes that the surface of the acid or salt containing polymers of Wang, noted above, will be rather conductive due to the acid or ionic groups on the surface thereof, which is the opposite of being dielectric. Therefore, their surface dielectric constants are expected to be low, e.g. within the instantly claimed broad ranges. The PTO has no experimental facilities, as is well known. The appellant has provided no evidence that the above discussed acid or salt containing polymers of the cited prior art do not necessarily inherently have the instantly claimed dielectric constants. The examiner has given proper rationale to place the burden on the appellant to make such a showing relative to Wang's polymers as best as is

possible without doing experiments himself. We should not allow things that are known just because they have been re-phrased or re-characterized, such as by the recitation of parameters which are not commonly used, such as resin density or surface dielectric constant, without knowing whether these limitations are inherently possessed by the prior art disclosure. See MPEP 2112. As a matter of fact, Wang encompasses the instantly claimed polymers and these polymers must necessarily inherently have the properties of the instantly claimed polymers since they are the same polymers. For at least this reason, the inherency should be affirmed, though the breadth of the ranges of the instant claims and the other rationale cited by the examiner appear technically correct to the point that experimental evidence would appear warranted to validate or invalidate the examiner's conclusions of inherency.

The appellant's argument that the combination of the polymer encapsulated pigment and the acid functionalized polymer is an element would apparently require anticipation rejections exemplify at least subcombinations of claimed compositions to anticipate them. The examiner sees no basis for this in the law. The argument regarding it being common to find all elements of a given invention in the prior art is noted. However, in the instant situation, all of the elements are in a single piece of the cited prior art and constitute a large fraction of the cited prior art, as can be seen from proper reading of the reference as a whole.

Wang discloses the instantly claimed inventions with sufficient specificity so as to anticipate them for the reasons stated above.

This rejection should therefore be affirmed.

III. The following response applies to the arguments regarding the rejection of paragraph (9) III. above:

The remarks of paragraph (10) II. above are repeated herein.

The above rejection of paragraph (9) III. meets the requirements of the applicable case law, particularly, *Graham v. Deere* and the KSR decision referenced by the appellant.

The appellant argues that Wang does not teach each and every element of the instantly claimed invention. See the sections of Wang noted in the above rejection, which do disclose each and every element of the instant claims, either expressly or inherently, as noted in the rejection and as is clear from a fair reading of the reference as a whole. It is not limited to its examples and references are not even required to have examples.

One would make the instantly claimed combinations for the reasons discussed in the above rejection. The arguments of the appellant to the contrary do not consider the above stated rejection. Arguments of the appellant that Wang does not disclose particular elements of the instant claims are sufficiently addressed above, particularly in the sections of Wang cited in the above rejections. No improper hindsight is used in the above rejection. Only the disclosure of Wang was necessary for the instantly claimed elements and the rationale to combine them, as is clear from the above rejection. Note the KSR decision cited by the appellant, particularly the means expressed therein for establishing obviousness. Most of them are met by the above rejection. Arguments relating to the instant claims 41-44 are sufficiently addressed above.

Arguments regarding the instant claims 14 and 28 are sufficiently rebutted by the fact that Wang discloses using mixtures of solvents by "at least one water miscible co-solvent" at paragraph [0044], the mixture may contain non-volatile cosolvents, e.g. tetraethylene glycol and polyethylene glycol of paragraph [0044], and the lower amounts of these solvents of paragraph [0045] encompasses the amounts of the instant claims 14 and 28, as stated in the above rejection.

As a practical matter, the examiner was able to choose solvents or mixtures thereof that accomplished specific goals in undergraduate studies by knowing that "like dissolves like" polarity things, and mixtures of various solvents tend to have somewhat predictable vapor pressures and boiling points, as studied in physical chemistry. It is noted that those abilities are not expected to compare remotely to the abilities of the ordinary skilled artisans in this art, most of whom have PhDs and numerous years of experience in the field. Choosing mixtures of solvents and cosolvents and amounts of each is expected to give only predictable results to these ordinary skilled artisans, particularly from a rather narrow list of solvents and amounts as specified in Wang. It is noted that occasionally an unpredictable result is attributed to the solvent mixture in a patentable manner, but no evidence of unexpected results stemming from the instant claims' 14 and 28 limitations are seen in the instant case. It remains the examiner's position therefore, that the disclosure of the cited prior art is sufficient to render these claims obvious for the reasons stated in the above rejection, particularly considering the level of skill of the ordinary skilled artisan in this art and the nature of the disclosure of Wang.

This rejection should therefore be affirmed.

IV. The following response applies to the arguments regarding the rejection of paragraph (9) IV. above:

The above discussion, as it applies to Wang, is repeated herein.

The appellant's arguments regarding this rejection do not appear to rebut the rationale for which Miyabayashi is expressly cited above. The appellant's arguments appear to be those issues which are discussed above regarding Wang's disclosure alone.

This rejection should be affirmed for the same reasons as applied to the disclosure of Wang alone above.

V. The following response applies to the arguments regarding the rejection of paragraph (9) V. above:

Appellant's argument that the combination of references of the rejection of paragraph (9) V. above does not teach or suggest each and every element of the instant claims. Each and every element is pointed out in the above rejection. The appellant argues that Kato references difficulties with inkjet printing including regulating thermal properties specified by the appellant at column 26, lines 25-28. It is noted that Kubota describes ink jetting their compositions at e.g. paragraph [0113]. Therefore, they have clearly overcome these "difficulties" in jetting inks as has Kato. Kubota is only silent as to the type of print head, e. g. piezo or thermal. Since there are only two types possible, Kubota does not say that one type will not work, and Kubota does not specify the type specifically, it is reasonable to expect that they intended both types to be encompassed. Minimally, the similarities between the inks of Kubota and Kato and Moffatt indicate that the inks of Kubota discussed in the above rejection would be printable with a thermal inkjet print head of the instant claims. Applicant's arguments regarding the difficulties of inkjetting and thermal inkjet printing ignore that the ordinary skilled artisan has figured out how to do these things as evidenced by the above cited prior art. The reasoning of the above rejection is not circular reasoning or hindsight. The rejection meets the applicable case law, particularly *Graham v. Deere* and "*KSR*". The argument that Kubota is more likely drawn to piezzo printing than thermal printing is unfounded, particularly given the reasons above and the

common usage of thermal printing as evidenced by the secondary references cited above. If Kubota wanted to exclude such a common means of printing, they surely would have done it expressly. Kato's warning applies to all inkjetting, not only thermal inkjetting. At best this "warning" shows that it is within the ability of the ordinary skilled artisan to adjust these parameters as necessary for a given type of inkjet printing. It is not seen where Kato states that not every ink can be made thermally compatible, as argued by the appellant. This appears to be a misstatement as to what Kato actually states in their "warning". The components of Kubota are clearly thermally inkjettable per the disclosures of Kato and Moffatt. No reason is seen why their combinations would not be thermally inkjettable. The appellant provides no probative evidence to support their arguments that the inks of Kubota are not thermally printable.

The above rationale regarding the breadth of the instantly claimed densities of the instant claims 41 and 43 and the expectation that particles having conductive moieties, e.g. acid groups, on their surfaces will have low surface dielectric constants, i.e. within the instantly claimed broad ranges thereof, apply equally to this rejection. The above rejection meets the requirements of inherency regarding the instant claims 41-44 and the polymer particles of the prior art as stated in the above rejection. There is no probative evidence to the contrary.

Appellant's arguments regarding the instant claims 13-14 and 27-28 are rebutted by the stated rationale in the above rejection regarding the obviousness of the instant claims 13-14 and 27-28, particularly considering the level of skill of the ordinary skilled artisan in this art and their ability to predict the results stemming from the use of particular combinations of solvents and amounts thereof, particularly from relatively small lists of solvents such as those of Kubota. No unexpected results are seen stemming from the limitations of the instant claims 13-14 and 27-28

over the cited prior art in a manner commensurate in scope with the instant claims and the cited prior art, which broadly encompasses these combinations, as stated in the above rejection, particularly by references to the use of solvent mixtures and the recited amounts noted above.

This rejection should therefore be affirmed.

VI. The following response applies to the arguments regarding the rejection of paragraph (9) VI. above:

The discussion above regarding Kubota in view of either Kato or Moffatt is repeated herein. These discussions rebut the appellant's arguments regarding Kubota in view of either Kato or Moffatt. The appellant's arguments do not appear to rebut the rationale for which Miyamoto is cited per se. The above discussion regarding Wang alone is incorporated herein to rebut the appellant's arguments to this rejection as they apply to the rationale for which Wang is cited in this rejection.

This rejection should therefore be affirmed.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Patrick D Niland/
Primary Examiner
Art Unit 1796

Art Unit: 1796

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/David Wu/

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